AMENDMENTS

In the Claims

1.   (Original) A method for transforming one or more lists for a data communications system into a single list, each list of the one or more lists including a plurality of entries, the method comprising:

   removing non-terminating entries from the plurality of entries in the one or more lists, the removing each non-terminating entry removing all but a last non-terminating entry in any of the one or more lists; and

   eliminating from the plurality of entries one or more entries that provide for one or more impossible actions, wherein:

   the removing of non-terminating entries and the eliminating of one or more entries that provide for impossible actions, if any, produce a single list preserving tracing of the entries in the single list to the plurality of entries.

2.   (Original) The method of Claim 1 wherein each of the plurality of entries provides an indication of a source of the entry with an action code to create a pairing.

3.   (Original) The method of Claim 1 wherein the preserving tracing permits determining statistical parameters of the data communication system.

4.   (Original) The method of Claim 3 wherein the statistical parameters include counts of matched entries.

5.   (Original) The method of Claim 1 wherein the removing and the eliminating is performed at a network element of the data communication system.

6.   (Original) The method of Claim 1 wherein the list of entries is an Action Control List (ACL) and wherein each entry is an Action Control Entry (ACE).

7.   (Original) The method of Claim 1 wherein the one or more lists of data are action control lists (ACLs), the method further comprising:

combining at least a first and a second ACL by combining each non-terminating entry in a first ACL with each entry in a second ACL; and

repeating the combining recursively to a third or more ACLs, if present, until each ACL is collapsed into the first ACL to create the single list.

8.   (Original) The method of Claim 7 wherein the single list holds a plurality of Action Control Entries (ACEs) that are codeable into a first match engine capable of computing a large number of Boolean expressions in parallel and returning an index of first matching ACEs.

9.   (Original) The method of Claim 8 wherein the first match engine is implemented as one of a ternary content addressable memory (TCAM) and a hardware device capable of computing a large number of Boolean expressions in parallel and returning an index of first matching ACEs.

10.   (Original) A data routing system to administer entries, the data routing system comprising:

a network element configured to receive a plurality of Action Control Lists (ACLs) organized to hold a plurality of Action Control Entries (ACEs);

a processor configured to receive the plurality of ACLs holding the plurality of ACEs, the processor adapted to:

remove any non-terminating entries from the plurality of ACEs in the plurality of ACLs, wherein the removal of each non-terminating entry removes all but a last non-terminating entry in any of the ACLs; and

eliminate from the ACEs one or more ACEs that provide for one or more impossible actions if present, wherein the removal of non-terminating entries and the elimination of one or more ACEs that provide for impossible actions produce a single list with entries, the single list configured to preserve tracing of the entries in the single list to the plurality of ACEs.

11. (Original) The data routing system of Claim 10 further comprising:
a hardware device coupled to receive the single list with entries, the hardware device
being a parallel-first match engine.

12. (Original) The data routing system of Claim 11 wherein the hardware device is
one of a content addressable memory and a ternary content addressable memory.

13. (Original) The data routing system of Claim 11 wherein the single list with
entries is coded for presentation to the hardware device.

14. (Original) The data routing system of Claim 10 wherein the one or more ACEs
provide for a plurality of actions.

15. (Original) The data routing system of Claim 10 wherein the one or more ACEs
provide for one or more of:
encryption and decryption, web caching, tunneling, redirection to a predetermined router
interface, redirection to a separate processor or linecard for one or more of the
encryption, decryption, web caching, and tunneling.

16. (Original) A computer system comprising:
a processor; and
a memory, the memory including instructions, the processor for executing the
instructions, the instructions including encoding instructions for one or more lists,
each list including a plurality of entries, the encoding instructions including:
skip entry removal instructions for removing non-terminating entries from the
plurality of entries in the one or more lists, the removing each non-
terminating entry removing all but a last non-terminating entry in any of
the one or more lists; and
impossibility entry elimination instructions for removing from the plurality of
entries one or more entries that provide for one or more impossible
actions, wherein the removal of non-terminating entries and the removal
of one or more entries that provide for impossible actions produce a single

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list preserving tracing of the entries in the single list to the plurality of entries.

17.   (Original) A computer program product, the computer program product comprising:

    signal bearing media bearing digital information adapted to include programming, the digital information including:

        a block configured to remove non-terminating entries from the plurality of entries in the one or more lists, the removing each non-terminating entry removing all but a last non-terminating entry in any of the one or more lists; and

        a block configured to eliminate from the plurality of entries one or more entries that provide for one or more impossible actions, wherein:

        the removal of non-terminating entries and the elimination of one or more entries that provide for impossible actions produce a single list preserving tracing of the entries in the single list to the plurality of entries.

18.   (Original) A network element configured to transform one or more lists for a network, each list including one or more entries, the network element comprising:

    means for removing non-terminating entries from the one or more entries in the one or more lists, the removing each non-terminating entry removing all but a last non-terminating entry in any of the one or more lists; and

    means for eliminating from the one or more entries each entry that provides for one or more impossible actions, wherein the means for removing of non-terminating entries and the means for eliminating each entry that provides for impossible actions provide a means for producing a single list preserving tracing of the entries in the single list to the one or more entries.

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